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Supplement to the Myriapoda of the Philippine Islands

By YU-HSI MOLTZE WANG, Division of Biology, University of Utah

The following notes are based upon a collection of Myriapods sent to me for study through the kindness of Dr. Willis J. Gerstch. The specimens with which this paper is concerned were collected by Mr. Borys Malkin and deposited at the American Museum of Natural History, New York. To both of these men I am grateful.

Class CHILOPODA

Order Geophilida

Mecistocephalus rubriceps Wood 1863

1 female 42 mm. in length, taken at Baquio, Mountain Province, Luzon, El. 4200–4400, Nov. 3, 1945. The coxae of the anal legs have pores variable in size, the larger ones being about 20 in number, the smaller ones numerous.

Order Scolopendrida

Cryptops melanotypus Chamberlin 1941

1 female 15 mm. in length, taken at Mt. Maquiling, Laguna Province, Luzon, El. 1200, Nov. 25, 1945.

Cryptops brunneus Chamberlin 1921

1 female 19 mm. in length, taken at Mt. Maquiling, Laguna Province, Luzon, El. 1500, Dec. 30, 1945. In the key for dis-

tinguishing these two species given in The Myriapoda of the Philippine Islands (Serica, vol. 1, p. 48), there was a misprinting in the key of couples 4a and 4c, which should be corrected to read as follows:

"4a. . . . the third tergite having the spiracles large and longitudinally ellipic .....*Cryptops brunneus.*
4c. . . . the third tergite having the spiracles as usual .....
.....*Cryptops melanotypus.*"

Otostigmus astenus Kohlrausch 1881

1 female 45 mm. in length, taken at Mt. Maquiling, Laguna Province, Luzon, El. 600–1200, Oct. 1945. 1 female 36 mm. in length, taken at Baguilo, Mountain Province, Luzone, El. 4200–4400, Nov. 3, 1945.

Rhysida nuda brevicornuta Wang 1950

1 female 22 mm. in length, taken at Alabang, Rizal Province, Luzon, Dec. 1945. It was formerly found at Mindanau. The name of this species is misprinted on pages 42 and 55 respectively in Serica, vol. 1, as *R. N. brevicornis.*

Scolopendra subspinipes subspinipes Leach 1815

1 female 30 mm. taken at Mt. Maquiling, Paguna Province, Luzon, El. 1100–1400, Sept. 29, 1945.

Scolopendra morsitans L. 1758

1 male 50 mm. in length, taken at Ft. W. McKinley, Jan. 10, 1946, 1 female 62 mm. in length, taken at Alabang, Sept. 1945, 2 females 55 and 65 mm. in length, taken at Alabang, July 1945, all at Rizal Province, Luzon.

Order Scutigerida

Parascutigera philippina Chamberlin 1921

1 male 9 mm. in length, taken at Los Banos, Laguna Province, Luzon, July 1945.

Class DIPLOPODA

Order Polydesmida

Chondromorpha xanthotrica (Attems) 1898

1 male 1.5 mm. in breadth, taken at San Fernando, Lu Uni Province, Luzon, Nov. 2, 1945. 1 female 2.1 mm. in breadth, taken at Alabang, Rizal Province, Luzon, Jan. 1946. This is the new record in distribution since the Genus *Chrondromorpha* is mainly distributed in India; only one species has been recorded from Upolu, New Caledonia. This species was formerly recorded from Ceylon, Kandy.

Pratinus quatuor-puteus (Wang) 1950

1 male 38 mm. in length, 3.5 mm. in breadth; 1 female 31 mm. in length, 3 mm. in breadth, taken at Mt. Maquiling, Laguna Province, Luzon, El. 1100–1400, Sept. 29, 1945. This genus was first designated as *Prionopeltis* Pocock 1895 but was changed to *Pratinus* by Attems in 1937, because the former name is preoccupied by a trilobite *Prionopeltis,* Hawle and Corda 1847. Accordingly, ***montanus*** Chamberlin and ***infulatus*** Wang are thus to be placed under the new name.

Pratinus montanus (Chamberlin) 1921

5 females, 1 male 27–45 mm. in length, 2.5–4 mm. in breadth taken at Mt. Maquiling, Laguna Province, Luzon, El. 600–3200, Oct., Nov., Dec. 1945; 1 female 41 mm. in length taken at Mariveles Res., Zambales Mts., Zambales Province, Luzon, El. 700–1000, Nov. 27, 1945.

Strongylosoma philippina Chamberlin 1921

1 male taken at Mt. Maquiling, Laguna Province, Luzon, El. 1100–1400, Sept. 29, 1945.

Platyrhacus margaritiferus Gervais 1847

1 male, 1 female taken at Mt. Maquiling, Laguna Province, Luzon, El. 1100–1500, Sept. 29, 1945, Jan. 13, 1946.

Platyrhacus dorsalis Peters 1864

1 female from the Philippines in the University of Utah Collection.

Order Spirobolida

Trigoniulus laminifer docens Wang 1950

1 male, taken at Mt. Maquiling, Laguna Province, Luzon, El. 1500–3200, Nov. 21, 1945.

Spirostrophus socius socius Chamberlin 1921

1 female each taken at Mt. Maquiling, Laguna Province, Luzon, El. 800–3000, Nov. 18, 1945, and at Dolores, Tayabas Province, Luzon, El. 1200, Nov. 13, 1945.

Spirostrophus socius mindanaunus Wang 1950

1 male taken at Mt. Maquiling, Laguna Province, Luzon, El. 600–1200, Oct. 13, 1945.

Spirostrophus socius sumarinus Wang 1950

2 females taken at Los Banos, Laguna Province, Luzon, Oct. 30, 1945.

Improved Technique for Rearing Chigger Mites [1, 2] (Acarina: Trombiculidae)

By Louis J. Lipovsky

A culture tube and a dish for rearing chiggers have been used successfully for the past four years. The tube and dish are used without any material other than a mixture of charcoal and plaster of Paris which line the tube and dish. The tube is used primarily for engorged larvae held for transformation into nymphs; however, rearing may be continued through the adult stage using the 3- or 5-dram vial described below. The culture dish is especially useful and convenient for observations and ease of manipulation of the post-larval stages.

[1] The studies upon which this paper is based were conducted under contract, N6 ori 220 Task Order II, between the University of Kansas and the Office of Naval Research.

[2] Contribution number 792 from the Department of Entomology, University of Kansas.

The culture tube is a modification of the tube described by Farrell and Wharton (1948, Jour. Parasit. 34: 71) for shipping larval trombiculids; however, it is made with a 3- or 5-dram, Kimble "Opticlear," plastic-stoppered vial instead of a cork-stoppered shell vial. This plastic-stoppered vial is suitable for shipping all stages of chiggers as well as the collembloans which are cultured as food for the nymphs and adults (Lipovsky, 1951, Jour. Parasit. 37: 324–326).

The vial, 3- or 5-dram, is lined completely with a charcoal and plaster of Paris mixture. This mixture is prepared as follows: mix 600 c.c. of dry, slow-setting (common) plaster of Paris with 50 c.c. of powdered charcoal; blend thoroughly by shaking in a capped jar. This amount of plaster mixture will be sufficient for many vials. The same mixture is used to make the culture dish.

Seven cubic centimeters (slightly compacted) of this dry mixture is placed in the 3-dram vial and to this 3 c.c. of water are added and mixed until plastic but not fluid; if it flows add a little more dry mixture. Then the plastic stopper is placed tightly in the vial, and, holding the inverted vial between thumb and forefinger, the stoppered end is tapped sharply 6 to 8 times on a flat, solid, wooden surface. Turned upright again, the vial is tapped 3 to 4 times (relax hold on vial during moment of impact to avoid injury if vial should break).

At this point the top and sides of the vial should be lined with a thin, uniform coat and the bottom of the vial should contain about 15 mm. of wet plaster. After the plaster has set, the stopper is slowly removed. The plaster lined vial should have a thin seal at the opening of the tube, just beneath the bottom level of the plastic stopper. This seal is removed carefully and then discarded. For the admission of light within the tube, 4 or 5 longitudinal slits are made in the plaster on the sides of the tube. The culture tube is now ready for use.

Stoppered tubes will maintain a uniform humidity for many months and no water need be added when chiggers are first placed in the tubes. When these tubes are used for shipping, 3 or 4 pin holes should be made in the bottom portion of the

stopper; and if the top of the cap is also solid, pin holes should be made here also to compensate for the changes in temperatures and pressures encountered during shipment. If a tube is opened frequently for observations, a few drops of water may be added as needed but care should be taken to avoid adding water in excess of that absorbed by the plaster.

The dish is a stender dish with an inside diameter of 65 mm. and 20 mm. in depth. It is lined inside with the same plaster mixture used in making the culture tube. The wet mixture is blended and shaped against the sides of the dish up to the top edge, then the bottom of the dish is tapped until the mixture forms a level bottom with a thin plaster lining on the sides. When set, the plaster should be smooth, free of pits and cavities. The upper 6 mm. of plaster lining should be removed to form a plaster-free zone. This plaster-free band must be kept clean and smooth to act as a barrier to the nymphs and adults.

Coating the outside of the dish and the entire lid with paraffin as well as covering the lid with waxed paped is recommended. As the paraffin solidifies on the lid, the dish and lid are fitted together tightly. The lid is then covered with a sheet of thin waxed paper by placing the waxed paper over the open dish, pressing the lid snugly to the dish, lifting the edges of the paper over the top of the lid and fusing it to the paraffin coating with a hot spatula. The inner central portion of the paper should remain free, leaving a space between the waxed paper and the lid.

Farrell and Wharton (1949, Jour. Parasit. 35: 435) recommend the use of vermiculite, a mica, as a "substrate" over a charcoal-plaster mixture. Hyland (1951, Ann. Ent. Soc. Amer. 44: 297–301) reported on the use of a small stender dish as a microculture dish, with the charcoal-plaster mixture covered with a thin layer of sterilized soil. The writer has found that two grooves cut into the plaster surface about 2 mm. in depth and 2 mm. wide, in the form of a cross, and centrally located, is all that is needed. These straight grooves provide a protective niche into which nymphal and adult chiggers may crawl, where they may transform and yet be visible under the microscope. In dishes which contain both collembolans and chiggers for periods

of weeks or months, the grooves become filled with eggs, exuviae, and some debris under which chiggers may conceal themselves. These grooves, therefore, should be cleaned out periodically to avoid possible injury to specimens when trying to locate them.

This culture dish is ideal for individual rearing of chiggers or for as many as 50 adults of the same species. In the latter instance, food must be available at all times or they may eat their own eggs for they are cannibalistic. Their own eggs are frequently eaten even when other food is available.

In addition, this culture dish has been used successfully for rearing other small arthropods including mites of the families Oribatidae, Tyroglyphidae, Trombidiidae, Phytoseiidae, Macrochelidae, Anoetidae, Uropodidae, and Cheyletidae as well as insects of the families Cryptostemmatidae (Hemiptera), Staphylinidae and other coleopterous species, and Stratiomyiidae, Sciaridae, Mycetophylidae and other Diptera.

Catches of Euplexoptera and Elateridae in Light Traps in South Dakota

By H. C. Severin, South Dakota State College

Light traps have been operated in representative areas in South Dakota for many years and during this time much valuable information concerning insects has been accumulated. In this article, catches dealing only with Euplexoptera and Elateridae will be discussed.

The earwig, *Labia minor* (L.) is the only species of Euplexoptera that can be reported as occurring in South Dakota at the present time. This earwig is not common in South Dakota and strange to say we have been able to collect it only through light traps or from illuminated show windows of store buildings in southeastern South Dakota. Diligent search has been made for this species of earwig in what should have been very favorable environments, but we have not been able to collect a single

specimen in such areas. However, by means of light traps, we have taken as many as fifteen specimens of this earwig in a single night. While specimens were taken from illuminated show windows of store buildings, it has not been possible for us to collect more than three of four earwigs from such windows in a single evening.

The light traps, through which we collected this species of earwig, were suspended by means of wires from cross arms attached to posts. The bottom of each trap was about seven feet from the surface of the soil. The environment in which the largest numbers of earwigs were collected was adjacent to a cattle feeding yard which contained quite a large accumulation of cow manure. Contrary to the conclusion of S. W. Frost,* we are forced to believe that at times, at least, *Labia minor* (L.) is attracted through light supplied by Mazda frosted lamps of 60, 100, or 200 watts or by fluorescent day-light tubes of 15 watts.

Twenty species of adult Elateridae were taken thus far in South Dakota in light traps.** The species collected are the following:

1. *Conoderus vespertinus* (Fab.)
2. *Conoderus auritus* (Hbst.)
3. *Drasterius dorsalis* (Say)
4. *Limonius ursinus* (VanDyke)
5. *Athous cucullatus* (Say)
6. *Hemicrepidius memnonius* (Hbst.)
7. *Glyphonyx recticollis* (Say)
8. *Ampedes obliquus* (Say)
9. *Ampedes areolatus* (Say)
10. *Megapenthes stigmosis* (Lec.)
11. *Melanotus decumanus* (Er.) = *M. canadensis* (Cond.) acc. to Dietrich.
12. *Melanotus ignobilis* (Melsh.)
13. *Melanotus communis* (Gyll.) Var. "A" of Dietrich
14. *Melanotus communis* (Gyll.) Var. "B" of Dietrich
15. *Melanotus divarcarinus* (Blatchley)
16. *Melanotus fissilis* (Say)

* Frost, S. W. 1952. Unusual catches in light traps. Ent. News, 63: 151–152.

** Severin, H. C. 1949. The wireworms (Elateridae) of South Dakota. S. D. Agr. Exp. Sta. Tech. Bull. 8: 18.

17. *Melanotus infaustus* (Lec.)
18. *Melanotus cribulosus* (Lec.)
19. *Cardiophorus convexux* (Say)
20. *Horistonotus uhleri* (Horn)

Of the species listed, those numbered 1, 3, 6, 7, 11, 12, 13, 16, and 19 were taken in large numbers in the light traps. None of the traps were located under or in trees or under structures from which the beetles might have fallen by accident into the traps. Consequently, the conclusion must be drawn that most of the specimens taken were attracted to the traps by the light.

It should be stated that the number of specimens of a particular species of Elateridae that are taken in a light trap may depend upon many factors, only two of which will be mentioned. One of the most important factors is the effect of the ecological environment upon the abundance of the Elaterid. As an example of this *Hemicrepdius memnonius* (Hbst.) may be mentioned. In one of the traps located in a low area that was poorly drained and adjacent to a pond, it was not uncommon to take fifty to seventy-five specimens of this species every warm, rainless, calm night during the month of July.

Another important factor which may determine the number of specimens of a particular species of Elaterid that may be taken in a light trap is the time of year when the traps are run. We have taken specimens of Elateridae in traps from May through September, but in general, June, July, and August were the most favorable months, with July being the peak month.

An Acknowledgment

ENTOMOLOGICAL NEWS wishes to express its thanks and appreciation to the ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA for contributing a portion of the time of its Librarian, Mrs. Phillips, for compiling its "CURRENT ENTOMOLOGICAL LITERATURE." This generous action by the ACADEMY assures the continuance of a unique and valuable feature of the NEWS, one upon which many of its readers have come to depend for keeping abreast of current developments in entomology.

Earwigs at Light

The infrequency of observations and scarcity of records on the 15 or so species of Dermaptera in the United States have suggested that these insects are not attracted by light. Although a few collectors have taken earwigs at light,* as evidenced by collection labels and literature notes, I submit the following cases where earwigs have definitely been attracted to light or were scavenging under lights.

Doru lineare (Escholtz) has been most commonly recorded at light. Both sexes of this earwig regularly flew in to 3 Coleman lanterns set up before a sheet in many localities in Arizona and Texas, from May through September, 1948. During the same season in Mexico, from the state of Nuevo Leon south to Vera Cruz, Puebla, and Guerrero, they often came to the lights by the hundreds.

Spongovostox apicedentatus (Caudell). Both sexes were taken at lights in Sabino Canyon, Santa Catalina Mts., Arizona, July, 1948.

Labia minor (L). In Lexington, Mass., June, 1952, one female was caught in erratic, spiraling flight around an indoor light, similar to that shown by many moths and beetles.

Labidura riparia (Pallas). One female was observed running about, probably scavenging, on a broad, well-lighted expanse of concrete in Dayton, Texas, September, 1949.

Forficula auricularia (L). Dr. K. A. Christiansen took several nymphs and one female in a light trap at Palouse, Washington, June, 1950.

The last two records are probably cases of scavenging at light, although the others indicate that certain species of earwigs are definitely attracted by light. Since many winged males of such photophobic insects as roaches are well known to be attracted to light, it does not seem surprising that earwigs might also be so attracted.

—W. L. Nutting, Biological Laboratories, Harvard University.

* Frost, S. W. 1952. Unusual catches in light traps. Ent. News, 63: 151–152.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1952 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Anon.—Henry Jerome Turner (1856–1950). [144] 1951–52: xiii. (Obit., port.) **Bernard, F.**—(See Hymenoptera.) **Boschma, H.**—Alida Margaretha Buitendijk. [57] 13, no. 306: 177–178, 1950. (Obit., bibl.) **Coiffait, H.**—Quelques données actuelles sur l'écologie et l'éthologie des arthropodes cavernicoles terrestres et endogés. [135] 86: 125–130. **Coquillat, M.**—Anthelme-Jean Bange, 1896–1950. [140] 19: 213–214, 1950. (Obit., port.) **Davies, D. E.**—(See Orthoptera.) **Davies, D. M.**—(See Diptera.) **DeCoursey, J. D. & A. P. Webster.**—Inhibition of growth of a mold quantitated to demonstrate the effect in insect specimen boxes. [101] 60: 183–188. **Delamare-Deboutteville, C.**—(See Smaller Orders.) **Docters van Leeuwen, W. M.**—In memoriam Karel Willem Dammerman. [57] 14, no. 319: 1–2. **Eyndhoven, G. L. van.**—In memoriam Dr. Donald MacGillavry, 21.V.1869–13.I.1951. [149] 95: 1–7, ports. **Eyndhoven, G. L. van.**—In memoriam Prof. Dr. Ivar Tragardh 16–IX–1878–22–V–1951. [57] 13, no. 315: 335–336, 1951. **Havelka, J.**—Osobni-Personalia. RNDr. Karel Pfleger. [45] 48: 141–142, 1951. (Obit., portr.) **Hayrovsky, L.—Osobni. Frantisek Sterba.** [45] 48: 263, 1951. (Obit., bibl.) **Hemming, F.**—International code of zoological nomenclature; proposed amplification clarifications and extensions to be considered by the International Congress of Zoology, Copenhagen, 1953. (Notice.) [52] 45: 499–500. **Hemming, F.**—International code of zoological no-

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8. Acta Zoologica Lilloana. Tucuman, Argentina.
9. American Entomological Society, Transactions. Philadelphia.
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14. American Museum of Natural History, Bulletin. New York.
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17. Annales de Parasitologie humaine et comparée. Paris.
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This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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